WHAT IS AT RISK?

The variety and scale of the natural resources and human infrastructure/activities that are at risk are quite staggering.

Natural Resources: Approximately 325 miles of barrier islands with more than 20 inlets; the second largest estuarine and wetland system in the US; over 5,000 miles of estuarine shoreline; eight major drainage basins and the associated wetland system.

People and Industry: Population of 865,000 residents in 20 coastal counties (population growth rates on the barrier islands of 75-150% since 1980); tourism, agriculture, forestry, and commercial fisheries.

Infrastructure: private, public and commercial buildings in 20 coastal counties; roads and bridges; power systems and sewage treatment plants; water treatment and distribution systems.

U.S. and NC Government Land Holdings and Operations: U.S. Military Bases (3 major bases and many support facilities); U.S. Coast Guard Facilities (numerous); U.S. National Park Service (two National Seashores and two Historical Sites); U.S. Fish and Wildlife Service (13 National Wildlife Refuges); U.S. Forest Service (one National Forest); NC Department of Transportation (two major ports, 16 ferry facilities, many miles of coastal highways and many coastal bridges); NC Division of State Parks (10 State Parks and Historic Sites); NC Division of Wildlife Resources (~300 public boat launch sites and ~2 million acres of game lands).

The Intergovernmental Panel on Climate Change Report (IPCC, 2007) predicts increased rates of global sea-level rise over the next century in direct response to global climate warming. Increased rates of sea-level rise and possibly increased intensity tropical storms will likely impact the North Carolina coastal zone adversely in the following ways.

1. Accelerated rates of coastal erosion and resulting loss of agriculture and forestry lands, estuarine wetlands, and other coastal habitats.
2. Economic losses due to increased salt-water encroachment, higher flood levels, and increased storm damage.
3. Increased loss of urban infrastructure.
4. Collapse of some barrier island segments.
5. Negative impacts on North Carolina's coastal tourist and recreational fishing economy.

Approximately 25 miles of North Carolina's Outer Banks are immediately threatened by erosion. Along these island segments it is increasingly difficult and costly for NC DOT to maintain a coastal highway. More than 400 structures on the ocean-front and at inlet shorelines have been preserved only by walls of sand-bags (Figs. 11, 12). In the early 1990s about 12 miles of public ocean beach were being nourished on a regular basis; coastal communities are now trying to develop beach nourishment programs for over 122 miles (Fig. 13).

Is a rate of 16 inches/100 years (Horton et al., 2007; Kemp et al., 2007) for rising sea-level significant for the North Carolina coastal system? Major portions of Currituck, Carteret, Dare, Hyde, Tyrell, and Pamlico counties are only 1 to 2 feet above present sea level.

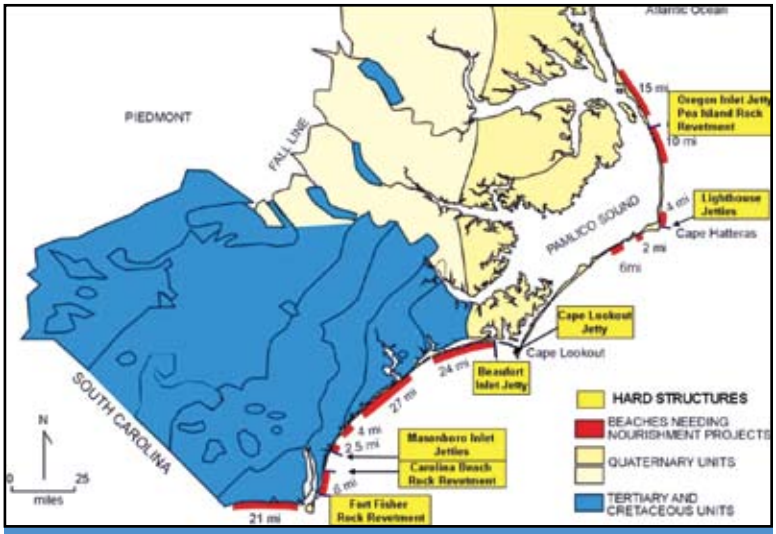

FIGURE 13. *Map of North Carolina shows the 122 miles of ocean shoreline (red lines) for which the associated communities are trying to fund beach nourishment programs. These 122 of 325 ocean shoreline miles represent a ten-fold increase since the early 1990s. Also indicated are the locations of eleven hardened structures (yellow boxes) that occur along the North Carolina ocean coast.*